



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/883,007	06/15/2001	Yingqiu Jiang	0127/1101.019	9663

7590 03/26/2004

Richard L. Sampson
Sampson & Associates, P.C.
50 Congress Street
Boston, MA 02109

EXAMINER

SEFER, AHMED N

ART UNIT	PAPER NUMBER
----------	--------------

2826

DATE MAILED: 03/26/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/883,007

Applicant(s)

JIANG ET AL.

Examiner

A. Sefer

Art Unit

2826

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 December 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-37 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-37 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

1. The amendment filed on December 15, 2003 has been entered; no new claims have been added.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-5 and 7-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kulkarni ("Kulkarni") USPN 5,731,859 in view of Stephenson et al. ("Stephenson") USPN 6,556,262.

Kulkarni discloses in figs. 2 and 3 a cholesteric liquid crystal polarizing device comprising: a substrate or glass (as in claim 11); an alignment layer 34 or polyimide (as in claim 12); and a cholesteric liquid crystal layer 40 including multiple domains 37 skewed at distribution angles (as in claim 4) and including a plurality of sub-domains, said sub-domains being disposed within a distribution of angles relative to said at least one domain (as in claim 3) and, each of said domains skewed at an angle relative to a plane parallel to said substrate or skewed at a substantially uniform angle (as in claim 2), but does not disclose domains being skewed at random angle.

Stephenson discloses in fig. 3B a cholesteric liquid crystal display device including domains skewed at random angle.

Art Unit: 2826

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to incorporate Stephenson's teachings since that would improve the device's optical properties.

Kulkarni '859 (see fig. 3 and col. 5, lines 29-35) reads on claim 5.

As to claim 13, Kulkarni discloses (see col. 1, lines 6-10 and 27-34) an LCD including the CLC polarizing device.

As to claims 7 and 8, the specification contains no disclosure of either the critical nature of the claimed arrangement or any unexpected results arising therefrom. Where patentability is said to be based upon particular chosen dimensions or upon another variable recited in a claim, the applicant must show that the chosen dimensions are critical. In re Woodruff, 919 F.2d 1575, 1578, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990).

Claims 9 and 10 refer to a method of production and "product by process" claims are directed to the product per se, no matter how actually made, In re Hirao, 190 USPQ 15 at 17 (footnote 3). See also In re Brown, 173 USPQ 685 and In re Thorpe, 227 USPQ 964, 966. Therefore, the way the product was made does not carry any patentable weight as long as the claims are directed to a device. Further, note that the applicant has the burden of proof in such cases, as the above case law makes clear. Also see MPEP 2113.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

Art Unit: 2826

having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 6 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kulkarni in view of Stephenson as applied to claim 1 above, and further in view of Ma ("Ma") USPN 5,796,454.

The combined references disclose the device structure as recited in the claim, but do not specifically disclose pixel regions.

Ma discloses (see figs. 5 and 7 and col. 4, lines 30-34 and col. 9, lines 59-67, col. 10, lines 1-13 and abstract) a cholesteric LCD comprising monochromatic device (as in claim 14) wherein pixel regions are arranged in a repeating array of red pixels, green pixels and blue pixels, said red pixels reflecting circularly polarized red light, said green pixels reflecting circularly polarized green light and said blue pixels reflecting circularly polarized blue light.

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to incorporate Ma's teachings with the device of the combined references since that would increase the contrast ratio of the LCD as taught by Ma.

6. Claims 15-18 and 25-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Willet et al. ("Willet") USPN 5,325,218 in view of Kulkarni and Stephenson.

Willet discloses in fig. 2 a reflective liquid crystal display comprising: a planar cholesteric liquid crystal polarizing device; a liquid crystal cell 20; and an internal quarter-wave retarder 30; said cholesteric liquid crystal polarizing device, said liquid crystal cell, and said quarter wave retarder being superposed with one another, but omits a cholesteric liquid crystal polarizing device, including multiple domains, each of said domains skewed at substantially uniform angle or at random angle relative to a plane parallel to the cholesteric LCD.

Art Unit: 2826

Kulkarni discloses in figs. 2 and 3 a cholesteric liquid crystal polarizing device including multiple domains skewed at a substantially uniform angle (as in claim 16) or skewed at distribution angles (as in claim 18) and including a plurality of sub-domains, said sub-domains being disposed within a distribution of angles relative to said at least one domain (as in claim 17), each of said domains skewed at an angle relative to a plane parallel to the cholesteric LCD.

Stephenson discloses in fig. 3B a cholesteric liquid crystal display device including domains skewed at random angle.

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to incorporate Kulkarni's teachings with Willet's device since that would provide a high efficiency device as taught by Kulkarni. It would have been obvious to incorporate Stephenson's teachings since that would improve the device's optical properties.

As to claims 25 and 26, the specification contains no disclosure of either the critical nature of the claimed arrangement or any unexpected results arising therefrom. Where patentability is said to be based upon particular chosen dimensions or upon another variable recited in a claim, the applicant must show that the chosen dimensions are critical. In re Woodruff, 919 F.2d 1575, 1578, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990).

Claim 27 refers to a method of production and "product by process" claims are directed to the product per se, no matter how actually made, In re Hirao, 190 USPQ 15 at 17 (footnote 3). See also In re Brown, 173 USPQ 685 and In re Thorpe, 227 USPQ 964, 966. Therefore, the way the product was made does not carry any patentable weight as long as the claims are directed to a device. Further, note that the applicant has the burden of proof in such cases, as the above case law makes clear. Also see MPEP 2113.

Art Unit: 2826

7. Claims 19-23, 28 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Willet in view of Kulkarni and Stephenson as applied to claim 15 above, and further in view of Ma.

The combined references disclose the device structure as recited in the claim, but do not specifically disclose pixel regions.

Ma discloses (see figs. 5 and 7 and col. 4, lines 30-34 and col. 9, lines 59-67, col. 10, lines 1-13 and abstract) a cholesteric LCD, wherein pixel regions are arranged in a repeating array of red pixels, green pixels and blue pixels, said red pixels reflecting circularly polarized red light, said green pixels reflecting circularly polarized green light and said blue pixels reflecting circularly polarized blue light.

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to incorporate Ma's teachings with the device of the combined references since that would increase the contrast ratio of the LCD as taught by Ma.

As for claims 19 and 20, Ma discloses (see fig. 6 and col. 10 14-62) a normally white and a normally black mode device.

Ma's reference (see fig. 3 and col. 4, lines 21-29) reads into claims 21 and 22.

As for claims 28 and 29, Ma discloses (see fig. 2 and claim 14) a cell 210 comprising a twisted agent (as in claim 28) and a polarizer and absorbing medium 260 (as in claim 29).

8. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Willet et al in view of Kulkarni and Stephenson et al. as applied to claim 15 above, and further in view of Okumura et al. ("Okumura") USPN 5,796,447.

Art Unit: 2826

The combined references disclose the device structure as recited in the claim, but do not specifically disclose a cholesteric liquid crystal comprising a plurality of pixel regions, which are in registration with a plurality of pixel regions of a TFT array.

Okumura discloses in figs. 1, 8 and 12 a cholesteric liquid crystal display including a TFT array having a plurality of pixel regions; and said plurality of pixel regions of said TFT array are in registration with said plurality of pixel regions of said cholesteric liquid crystal device.

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to incorporate the teachings Okumura et al since that would prevent a degradation in display image quality.

9. Claims 30, 31 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Willet in view Kulkarni and Stephenson/ Ma.

Willet discloses in fig. 2 a reflective liquid crystal display comprising: a planar cholesteric liquid crystal polarizing device; a liquid crystal cell 20; and an internal quarter-wave retarder 30; said cholesteric liquid crystal polarizing device, said liquid crystal cell, and said quarter wave retarder being superposed with one another, but omits a cholesteric liquid crystal polarizing device, including multiple domains, each of said domains skewed at a random angle relative to a plane parallel to the cholesteric LCD and an absorbing medium.

Kulkarni discloses in figs. 2 and 3 a cholesteric liquid crystal polarizing device including multiple domains skewed at an angle relative to a plane parallel to the cholesteric LCD.

Stephenson discloses in figs. 1-5 a cholesteric liquid crystal including domains skewed at random angle and an absorbing medium 70/Ma discloses a cholesteric device comprising a

Art Unit: 2826

liquid crystal cell 210 comprising a twisted agent (as in claim 33) and an absorbing medium 260.

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to incorporate Kulkarni's teachings with Willet's device since that would provide a high efficiency device as taught by Kulkarni. It would have been obvious to incorporate Stephenson's/Ma's teachings since that would improve the device's optical properties and would reduce a heat build-up

Kulkarni '859 (see fig. 3 and col. 5, lines 29-35) reads on claim 31.

10. Claim 32 is rejected under 35 U.S.C. 103(a) as being unpatentable over in Willet in view of Kulkarni and Stephenson/Ma as applied to claim 30 above, and further in view of Okumura.

The combined references disclose the device structure as recited in the claim, but do not specifically disclose a cholesteric liquid crystal comprising a plurality of pixel regions, which are in registration with a plurality of pixel regions of a TFT array.

Okumura discloses in figs. 1, 8 and 12 a cholesteric liquid crystal display including a TFT array having a plurality of pixel regions; and said plurality of pixel regions of said TFT array are in registration with said plurality of pixel regions of said cholesteric liquid crystal device.

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to incorporate the teachings Okumura et al since that would prevent a degradation in display image quality.

Art Unit: 2826

11. Claims 34-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Willet in view Kulkarni and Stephenson/Ma as applied to claim 30 above, and further in view of Van Haaren et al. USPN 5,737,044.

The combined references disclose a cholesteric LCD device structure as recited in the claim including black mode device and white mode device (see Ma fig. 6, col. 6, lines 38-67 and col. 10, lines 14-62), said cholesteric polarizing device reflecting left-hand or right-hand circularly polarized light, but fail to disclose a retarder oriented at 45 degrees.

Van Haaren et al disclose (see col. 7, lines 1-5) a retarder oriented at 45 degrees to a polarization direction.

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to incorporate the teachings of Van Haaren et al since that would provide a low viewing-angle dependence.

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Faris USPN 6,133,980 discloses an LCD with a phase-retardation surface.

13. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period

Art Unit: 2826


will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to A. Sefer whose telephone number is (571) 272-1921.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan Flynn can be reached on (571) 272-1915.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (571) 272-2800.

ANS
March 19, 2004



NATHAN J. FLYNN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800